



Roadmap of progress – Plants

	EYFS	Unit 1	Unit 2	Unit 3
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>	<ul style="list-style-type: none"> • Know that trees and plants grow in soil • Know plants and trees need water and sun light to grow 	<ul style="list-style-type: none"> • Main parts of a flower and their function – Root, stem, leaves, flower • Trees are a type of plant • Two main types of tree; deciduous and evergreen • Autumn and Spring are two seasons • In autumn leaves change colour and fall to the ground • In spring plants begin to regrow, trees and large bushes blossom. 	<ul style="list-style-type: none"> • Lifecycle of a plant • Plants need light, water, space and a suitable temperature to grow. 	<ul style="list-style-type: none"> • Purpose of root and stem • Parts of a flower • Plants need different nutrients • The role of insects in the transfer of pollen • Seed dispersal
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> • Ask simple questions. • I can use my senses and look closely. • I can create simple representations of people and objects. • I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary. 	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary. 	<ul style="list-style-type: none"> • Ask relevant questions. • Make careful observations. • Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. • Explain what I have found out using speaking and writing. • I can use relevant Scientific vocabulary.
<p>Key vocabulary</p>	<p>Plant, tree, flower, leaf, soil, water, light</p>	<p>Deciduous, evergreen, acorn, conker, harvest, bulbs, seeds, blossom</p>	<p>Seed, bulb, germinate, sprout, seedling, nutrients</p>	<p>Stamen, carpel, ovule, sepal, pollination, seed dispersal, nutrients</p>





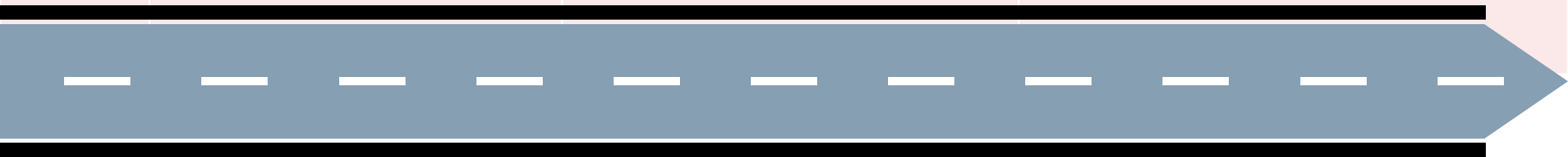
Roadmap of progress – Earth and Space

	EYFS	Unit 1	Unit 2	Unit 3
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>	<ul style="list-style-type: none"> • Know that we live on planet earth • Observe and identify the daily weather • Begin to name some seasons • Make observations of the world around them. 	<ul style="list-style-type: none"> • Name the 4 seasons and say when in the year they occur • Observe and describe weather associated with the seasons • Observe changes across the 4 seasons • Describe other features that change throughout the year that are caused by the change in weather. • Explain how day length varies across the year (longer in summer, shorter in winter) 	<ul style="list-style-type: none"> • Name some types of rock and describe the physical features of each • Compare and group together kinds of rocks based on their appearance • Compare and group together kinds of rocks based on their simple physical properties • Name the 3 types of rocks (igneous, sedimentary and metamorphic) and classify based on their appearance and physical properties • Describe how the 3 rock types are formed • Recognise that soils are made from rocks and organic matter • Describe in simple terms how fossils are formed when things that have lived are trapped in rock 	<ul style="list-style-type: none"> • Name the planets of Our Solar System and understand our place in our universe, describe the Sun, Earth, Moon and other planets as approximately spherical bodies • Describe the movement of the Earth around the sun in the solar system (a full orbit is 365 days, the Earth spins on its axis every 24 hours) • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the day • Describe the movement of the moon relative to the Earth (lunar cycles take 28 days, the lunar cycle and eclipses) • Describe the movement of the other planets relative to the sun in the solar system (fixed orbits) • Describe what meteors are, and name other objects in space • Explain how 'The Space Race' has expanded our scientific knowledge and discuss space travel
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> • Ask simple questions. • I can use my senses and look closely. • I can create simple representations of people and objects. • I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • I can compare things. I sort and group them. • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary. 	<ul style="list-style-type: none"> • Ask relevant questions. • Make careful observations. • Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. • Explain what I have found out using speaking and writing. • I can use relevant Scientific vocabulary. 	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions. • I decide what observations and measurements to make. • I use different scientific equipment to measure with precision. I take repeat readings when appropriate. • I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. • I report and present findings using speaking and writing including displays and presentations. • I use relevant scientific language and illustrations. • I use results to make predictions.



Roadmap of progress – light

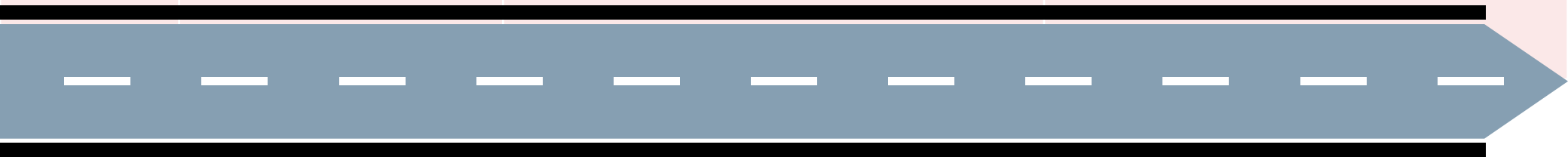
	EYFS	Unit 1	Unit 2
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>	<ul style="list-style-type: none"> Understand that we need light in order to see To know what a shadow is 	<ul style="list-style-type: none"> You need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Light from the sun can be dangerous and that there are ways to protect your eyes. Shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change. 	<ul style="list-style-type: none"> Light comes from a source, and we see things when light comes directly from the source or when it is reflected off an object. Light travels in straight lines Light enters the eye and our eye and brain work together to 'see' Light is reflected off all surfaces which is why we can see things Shadows are formed when the light from a light source is blocked by an opaque object Shadows have the same shapes as objects that cast them Rainbows are formed when sunlight is scattered from raindrops into the eyes of an observer.
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> Ask simple questions. I can use my senses and look closely. I can create simple representations of people and objects. I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> Ask relevant questions. Make careful observations. I set up and perform my own simple tests. Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. Explain what I have found out using speaking and writing. I can use relevant Scientific vocabulary. 	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions. I decide what observations and measurements to make. I use different scientific equipment to measure with precision. I take repeat readings when appropriate. I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. I report and present findings using speaking and writing including displays and presentations. I use relevant scientific language and illustrations. I use results to make predictions.
<p>Key vocabulary</p>	<p>Light, sun, moon, day, night, shadow</p>	<p>Light, light source, shadow, reflection, reflect, reflective</p>	<p>Light, light source, reflect, reflection, refraction, shadow</p>





Roadmap of progress – living things part 1

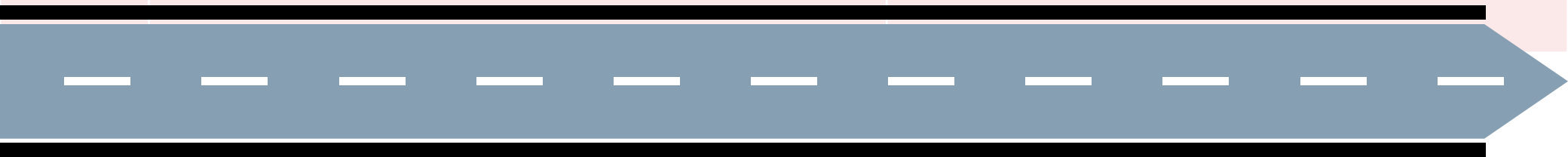
	EYFS	Unit 1	Unit 2
Substantive knowledge (the knowledge being imparted at any given point)	<ul style="list-style-type: none"> Show care and concern for living things and their environment. Create bug hotels and bird feeders Look after guinea pigs Talk about their own experiences at home. Comment and ask questions about the world around them 	<ul style="list-style-type: none"> Identify the differences between things that are living, dead, and things that have never been alive . Identify that most living things live in habitats to which they are suited. Explain in simple terms how an animal or plant is suited to its habitat. Name a variety of plants and animals in their habitats, including micro-habitats. Explain why different conditions in a habitat and micro habitat can affect the number and type of plants/animals that live there. Describe how plants and animals depend on each other for food and shelter. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain. Identify and name different sources of food. Construct a simple food chain that includes humans (e.g. grass, cow, human) with arrows pointing in the correct direction. 	<ul style="list-style-type: none"> Know the 7 life processes of living organisms. Use the 7 life processes to determine if an organism is living. Describe similarities and differences between examples of plants and animals. State the features of mammals, amphibians, fish, birds, reptiles (vertebrates) and invertebrates. Group living things in a variety of ways using key characteristics. To know and explore the work of Carl Linnaeus. Use classification keys to help group, identify a variety of living things in their local and wider environment. Use classification keys to name a variety of living things. Recognise that environments can change and this can sometimes pose dangers to living things. Shows an understanding that human actions can impact on the environment and can suggest some solutions to the issues.
Disciplinary Knowledge (Scientific enquiry skills)	<ul style="list-style-type: none"> Ask simple questions. I can use my senses and look closely. I can create simple representations of people and objects. I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). Talk about what I have found out. I use simple scientific vocabulary. 	<ul style="list-style-type: none"> Ask relevant questions. Make careful observations. Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. Explain what I have found out using speaking and writing. I can use relevant Scientific vocabulary.
Key vocabulary		Adaptations, cells, exercise, hygiene, respiration, nutrition	Environment, habitat, vertebrate, invertebrate, exo-skeleton, adaptation, organism, respiration





Roadmap of progress – living things part 2

	Unit 3	Unit 4
Substantive knowledge (the knowledge being imparted at any given point)	<ul style="list-style-type: none"> • Know that reproduction is when an animal or plant produces one or more individuals similar to itself. • Explain that sexual reproduction requires both male and female DNA (se x cells) and will produce offspring that are similar but not identical to the parents. • Explain that asexual reproduction will produce offspring that are identical to the parent and only requires one parent e.g. bulbs, tubers and runners. • Explain the life cycle of a mammal, amphibian, insect and bird • Explain the process of metamorphosis using frogs and butterflies as examples • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Use prior knowledge of parts of a flower to explain the stages involved in the reproduction process (pollination, fertilisation and germination). 	<ul style="list-style-type: none"> • Know that living things can be grouped according to different criteria • Recall that a cell is composed of a nucleus, cytoplasm and membrane. • Recall that living things can be multicellular or unicellular (bacteria). • Explain in simple terms how the Linnaeus system is used to classify living things. • Explain why we need to group living things. • Explain possible difficulties with classification (penguins and whales) • Explain how classification keys are used to group living things based on recognisable characteristics. • Construct a classification key. • State what microorganisms are and identify different microorganisms. • Give examples of some situations where microorganisms can be helpful. • Give examples of some situations where microorganisms can be harmful. •
Scientific enquiry skills	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions. • I decide what observations and measurements to make. • I use different scientific equipment to measure with precision. I take repeat readings when appropriate. • I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. • I report and present findings using speaking and writing including displays and presentations. • I use relevant scientific language and illustrations. • I use results to make predictions. 	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions. • I decide what observations and measurements to make. • I use different scientific equipment to measure with precision. I take repeat readings when appropriate. • I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. • I report and present findings using speaking and writing including displays and presentations. • I use relevant scientific language and illustrations. • I use results to make predictions.
Key vocabulary	Amphibian, excretion, insect, mammal, metamorphosis, reproduction	Amphibians, bacteria, classification, fungi, insects, invertebrate, mammals, microorganisms, reptiles, vertebrate





Roadmap of progress – Electricity part 1

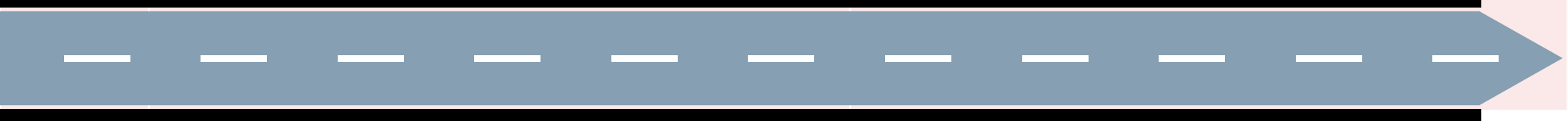
	EYFS	Unit 1
Substantive knowledge (the knowledge being imparted at any given point)	<ul style="list-style-type: none">• Have an understanding that some objects need electricity to work• Begin to understand that switches are used to turn items on and off• Name everyday objects that need electricity to work	<ul style="list-style-type: none">• Electricity is a form of energy, used or lighting, heating, making sound and making machines and appliances work.• Pylons and cables carry electricity through the countryside, some electricity cables in busy cities are buried underground• Appliances are devices that run on electricity and they should be used safely (includes, no frayed wires, avoid spillages and keep away from water, not putting objects into sockets• Compare life in a village that has no electricity• A circuit is a complete path around which electricity can flow• Circuits contain components like wires, switches and bulbs.
Disciplinary Knowledge (Scientific enquiry skills)	<ul style="list-style-type: none">• Ask simple questions.• I can use my senses and look closely.• I can create simple representations of people and objects.• I begin to use Scientific vocabulary.	<ul style="list-style-type: none">• Ask simple questions and recognise that they can be answered in different ways.• Observe closely, using simple equipment.• Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing).• Talk about what I have found out.• I use simple scientific vocabulary.
Key vocabulary	Electricity, switches, on, off, lights, televisions, phones, tablets	Electricity, circuit, light bulb, appliances, battery





Roadmap of progress – Electricity part 2

	Unit 2	Unit 3
Substantive knowledge (the knowledge being imparted at any given point)	<ul style="list-style-type: none"> Electricity is a form of energy, used for lighting, heating, making sound and making machines and appliances work. Some appliances run on electricity; some plug into the mains electricity and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. A series circuit is where all the components of the circuits are joined in one loop. If one part of the loop is incomplete, then the circuit will not work Names of components include cells, wires, bulbs/ lamps, switches and buzzers A cell is a single unit, and a battery is a collection of cells One way to test to see if a circuit is complete is to use a bulb/lamp, if the lamp turns on then the circuit is complete. Switches open and close circuits. When a switch is open the bulb/lamp will not light up as the series circuit is incomplete. Wires are made from metals as they are good conductors of electricity e.g., iron, copper and steel Insulators are materials that do not allow electricity to pass through them easily e.g., plastic, wood, rubber and glass. Thomas Edison invented the first practical incandescent light bulb 	<ul style="list-style-type: none"> Simple series circuits can be drawn using universally recognised symbols Switches in the on position allow the current to flow through the circuit. Switches in the off position stop the current flowing. Electric current is measured in amperes (A) Voltage (or potential difference) is a measure of the energy given to charge carriers (i.e. electrons) in a circuit. Voltage is measured in Volts (V) The voltage or number of cells in a circuit impacts the brightness of a bulb or volume of a buzzer Resistance is a measure of the opposition to current flow in a circuit. Resistance is measured in ohmz (Ω) Resistance in a circuit can differ depending on the conducting and insulating components. Static shocks occur when there is a separation of positive or negative charges and electrons are transferred from one thing to a person.
Scientific enquiry skills	<ul style="list-style-type: none"> Ask relevant questions. Make careful observations. I set up and perform my own simple tests. Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. Explain what I have found out using speaking and writing. I can use relevant Scientific vocabulary. 	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions. I decide what observations and measurements to make. I use different scientific equipment to measure with precision. I take repeat readings when appropriate. I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. I report and present findings using speaking and writing including displays and presentations. I use relevant scientific language and illustrations. I use results to make predictions.
Key vocabulary	Electricity, series circuit, cell, battery, component, insulator, conductor	Amperes, current, electrons, resistance, voltage, static electricity





Roadmap of progress – Animals and Humans part 1

	EYFS	Unit 1	Unit 2	Unit 3
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>	<ul style="list-style-type: none"> Identify and name parts of their body; head, arms, legs, feet, hands, toes and fingers Have some understanding of healthy and unhealthy foods Identify and name some common animals Have some understanding of growth and change. 	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals Identify, name, draw and label the basic parts of the human body. To know which body part is associated with each sense. 	<ul style="list-style-type: none"> Recognise that animals, including humans, have offspring which grow into adults To understand lifecycles Identify and describe the basic need of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of food and hygiene. 	<ul style="list-style-type: none"> Identify that animals, including humans need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Identify and group animals with and without skeletons. Compare and contrast the diets of animals and group them.
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> Ask simple questions. I can use my senses and look closely. I notice similarities and differences. I can create simple representations of people and objects. I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. I can compare things. I sort and group them Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). Talk about what I have found out. I use simple scientific vocabulary. 	<ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. I can compare things. I sort and group them Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). Talk about what I have found out. I use simple scientific vocabulary. 	<ul style="list-style-type: none"> Ask relevant questions. Make careful observations. I can carry out a fair test. I use different equipment to measure accurately in standard units. Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. Explain what I have found out using speaking and writing. I can use relevant Scientific vocabulary.
<p>Key vocabulary</p>		<p>Amphibians, Birds, Mammals, Reptiles, Carnivores, Omnivores, Herbivores</p>	<p>Diet, exercise, hygiene, nutrition, pulse</p>	<p>Skeleton, muscles, tendons, joints, invertebrate, vertebrate</p>



Roadmap of progress – Animals and Humans part 2

	Unit 4	Unit 5	Unit 6
Substantive knowledge (the knowledge being imparted at any given point)	<ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Compare the teeth of carnivores and herbivores and suggest reasons for differences. Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<ul style="list-style-type: none"> Gestation of humans is around 9 months Gestation in other mammals can be different The development of the embryo to a foetus Children reach certain milestones at different stages of development Children develop from babies to toddlers to children to adolescents. Humans reach adulthood at age 18. They are most fertile between 18 and 39 The body goes through several changes as adults get older. 	<ul style="list-style-type: none"> The circulatory system allows blood to carry oxygen and nutrients to be delivered around out body The circulatory system is made up of the heart, lungs, arteries, veins and capillaries The heart is a muscle which helps to pump blood around the body. It has 4 chambers. Oxygenated blood enters the heart and is pumped around the body via arteries. Deoxygenated blood returns to the heart via veins and is sent to the lungs to be oxygenated. Our heart rate increases as we exercise. This can be measured by feeling your pulse before and after exercise Drugs, alcohol and tobacco can have a detrimental impact upon our bodies. Long term overuse of these substances can have very serious effects on the body.
Disciplinary Knowledge (Scientific enquiry skills)	<ul style="list-style-type: none"> Ask relevant questions. Make careful observations. I can carry out a fair test. I use different equipment to measure accurately in standard units. Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. Explain what I have found out using speaking and writing. I can use relevant Scientific vocabulary. 	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions. I decide what observations and measurements to make. I use different scientific equipment to measure with precision. I take repeat readings when appropriate. I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. I report and present findings using speaking and writing including displays and presentations. I use relevant scientific language and illustrations. I use results to make predictions. 	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions. I decide what observations and measurements to make. I use different scientific equipment to measure with precision. I take repeat readings when appropriate. I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. I report and present findings using speaking and writing including displays and presentations. I use relevant scientific language and illustrations. I use results to make predictions.
Key vocabulary	Digest, esophagus, stomach, small intestine, large intestine	Adolescence, Embryo, Fertility, Foetus, Gestation, Hormones, Placenta	Circulatory system, exercise, heart, lungs, nutrients, oxygenated blood, pulse



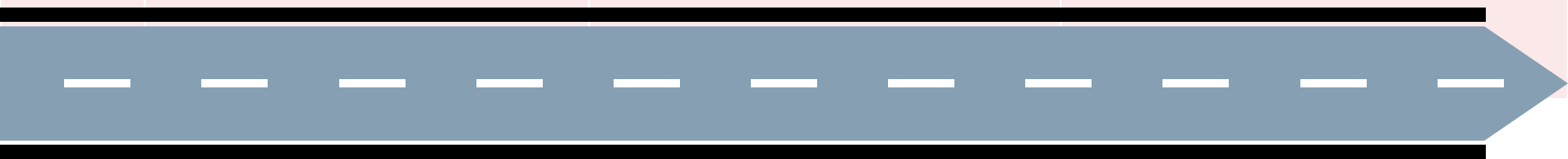
Roadmap of progress – Magnets and Forces

EYFS	Unit 1	Unit 2	Unit 3
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>	<ul style="list-style-type: none"> • Observe and describe different ways of moving • Identify similarities and differences between movement of different objects • Make suggestions about how objects can be made to move • Explore contact forces (push and pull) • Know that it is not only ourselves that make things move and ask questions about what is causing movement • Explore how objects sink or float 	<ul style="list-style-type: none"> • Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Describe magnets as having two poles • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Predict whether two magnets will attract and repel each other, depending on which poles are facing 	<ul style="list-style-type: none"> • Know the work of Isaac Newton and know that force is measured in Newtons by a Newton Meter • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance • Identify the effects water resistance • Identify the effects of friction acting between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater affect
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • I can compare things. I sort and group them • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary. 	<ul style="list-style-type: none"> • Ask relevant questions. • Make careful observations. • I can carry out a fair test. • I use different equipment to measure accurately in standard units. • Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables. • Explain what I have found out using speaking and writing. • I draw simple conclusions and make predictions for new values. • I suggest improvements and raise further questions. • I can use 	<ul style="list-style-type: none"> • Plan different types of scientific enquiries to answer questions. • I decide what observations and measurements to make. • I use different scientific equipment to measure with precision. I take repeat readings when appropriate. • I decide how to record data and results. I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs. • I report and present findings using speaking and writing including displays and presentations. • I use relevant scientific language and illustrations. • I use results to make predictions.



Roadmap of progress – Materials part 1

	EYFS	Unit 1 – everyday materials	Unit 2 – uses of everyday materials
<p>Substantive knowledge (the knowledge being imparted at any given point)</p>		<ul style="list-style-type: none"> • Correctly identify and name an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties(see key vocabulary)of a variety of everyday materials. • Compare a variety of everyday materials on the basis of their simple physical properties. • Group together a variety of everyday materials on the basis of their simple physical properties. 	<ul style="list-style-type: none"> • Identify what properties a material needs for a particular purpose. • Name the materials from which different objects are made. • Recognise suitable and unsuitable choices of materials for particular purposes based on physical properties (see vocabulary appendix for examples). • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Know that materials can be either man-made or naturally occurring. • Group objects into man-made or natural categories. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
<p>Disciplinary Knowledge (Scientific enquiry skills)</p>	<ul style="list-style-type: none"> • Ask simple questions. • I can use my senses and look closely. • I can create simple representations of people and objects. • I begin to use Scientific vocabulary. 	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • I can compare things. I sort and group them • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary. 	<ul style="list-style-type: none"> • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • I can compare things. I sort and group them • Gather and record simple data to help in answering questions (tables, tally charts, graphs and drawing). • Talk about what I have found out. • I use simple scientific vocabulary.
<p>Key vocabulary</p>		<p>Material, hard, soft, smooth, rough, shiny, flexible, rigid</p>	<p>Stiff, dull, waterproof, absorbent, transparent, translucent, reflective, non-reflective, opaque, elastic</p>





Roadmap of progress – Materials part 2

Unit 3 – states of matter

Unit 4 - properties and changes

Substantive knowledge (the knowledge being imparted at any given point)

- Know that all things are made up of particles.
- Know that particles are arranged differently in solids, liquids and gases.
- Name properties of solids, liquids and gases.
- Compare and group materials together according to if they are solids, liquids and gases, giving reasons to justify their choices.
- Observe that some materials change state when heated or cooled, and are able to give everyday examples of melting and freezing.
- Understand that melting and freezing are a state change between solids and liquids.
- Measure or research the temperature at which melting and freezing occurs for some materials.
- Know that water freezes at 0oC and boils at 100oC.
- Understand that condensation is a state change from a gas to a liquid.
- Understand that evaporation is a state change from liquid to gas.
- Know that the speed of evaporation depends on a number of variables including the temperature.
- Describe the water cycle.
- Identify the parts played by evaporation and condensation in the water cycle.

- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.
- Discuss the suitability of everyday materials for different purposes based on their properties, giving reasons, based on evidence from comparative and fair tests.
- Know the difference between reversible and irreversible changes.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes results in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
- Understand some materials will dissolve in liquid to form a solution.
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, and evaporating.
- Describe how to recover a substance from a solution.

Disciplinary Knowledge (Scientific enquiry skills)

- Ask relevant questions.
- Make careful observations.
- I can carry out a fair test.
- I use different equipment to measure accurately in standard units.
- Gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables.
- Explain what I have found out using speaking and writing.
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Key vocabulary

Particle, solid, liquid, gas, temperature, heating, melting point, boiling point, evaporation, condensation, thermal insulation

Solubility, dissolving, melting, solution, solute, transparency, conductivity, magnetism, filter, filtration, reactants

